JP920000070US1

PATENT

AF/2800

#10

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Isamu Tobita

Serial No.:	09/886,200	Art Unit:	2854
Filed:	June 21, 2001	Examiner:	Minh H. Chau
For:	PRINTER, FORM PRINTER, PRINTER CONTROL METHOD AND PRINT CONTROLLER		

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION - 37 CFR 1.192)

1. Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on July 25, 2003.

NOTE: "The appellant shall, within 2 months from the date of the notice of appeal under § 1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate." 37 CFR 1.192(a) (emphasis added).

2. STATUS OF APPLICANT

This application is on behalf of

- ☒ other than a small entity
- ☐ small entity

verified statement:

- ☐ attached
- ☐ already filed

3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

☐	small entity	$160.00
☒	other than a small entity	$320.00
	Appeal Brief fee due	**$320.00**

CERTIFICATE OF MAILING (37 CFR § 1.8)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Date: 8/18/03

Serena Beller
(Type or print name of person mailing paper)

Serena Beller
(Signature of person mailing paper)

4. EXTENSION OF TERM

NOTE: The time periods set forth in 37 CFR 1.192(a) are subject to the provision of § 1.136 for patent applications. 37 CFR 1.191(d). Also see Notice of November 5, 1985 (1060 O.G. 27).

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply.

(complete (a) or (b) as applicable)

(a) ☐ Applicants petition for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

Extension (months)	Fee for other than small entity	Fee for small entity
☐ one month	$ 110.00	$ 55.00
☐ two months	$ 410.00	$ 205.00
☐ three months	$ 930.00	$ 465.00
☐ four months	$ 1,450.00	$ 725.00
Fee		$_____

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next item, if applicable)

☐ An extension for _____ months has already been secured and the fee paid therefor of $_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request $_____

or

(b) ☒ Applicants believe that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicants have inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

Appeal Brief fee $320.00

Extension fee (if any) $0.00

TOTAL FEE DUE $320.00

6. FEE PAYMENT

☐ Attached is a check in the sum of $____

☒ Charge Account No. 50-0563 (JP920000070US1) the sum of $320.00.

A duplicate of this transmittal is attached.

7. FEE DEFICIENCY

NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

☒ If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 50-0563 (JP920000070US1).

AND/OR

☒ If any additional fee for claims is required, charge Account No. 50-0563 (JP920000070US1).

Reg. No.: 47,159

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#10 Appeal Brief 9-3-03 L. Sprull

JP920000070US1 PATENT

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Isamu Tobita	:	Before the Examiner: Chau, Minh H.
Serial No.: 09/886,200	:	Group Art Unit: 2854
Filed: June 21, 2001	:	
Title: PRINTER, FORM PRINTER, PRINTER CONTROL METHOD AND PRINT CONTROLLER	:	Intellectual Property Law IBM Corporation 972/B656 P.O. Box 12195 Research Triangle Park, NC 27709

APPEAL BRIEF

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. REAL PARTY IN INTEREST

The real party in interest is International Business Machines Corporation, which is the assignee of the entire right, title and interest in the above-identified patent application.

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on August 18, 2003.

Serena Beller
Signature

Serena Beller
(Printed name of person certifying)

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 are pending in the Application. Claims 1-13 stand rejected.

IV. STATUS OF AMENDMENTS

The Appellant's response to the Office Action having a mailing date of May 16, 2003, has been considered, but the Examiner indicated that it did not place the application in condition for allowance because the Appellant's arguments were deemed unpersuasive.

V. SUMMARY OF INVENTION

Impact printers are employed for printing characters on objects, such as multipart forms for which pressure sensitive paper or carbon paper is used. Specification, Page 1, Lines 6-7. The print head of an impact printer includes typically a plurality of dot pins, a drive mechanism for reciprocally extending the individual dot pins toward an object, such as a multipart form, and an ink ribbon positioned between the dot pins and the print object. Specification, Page 1, Lines 7-10.

To perform printing using such a print head, when the dot pins are extended by the drive mechanism, the distal ends thereof strike a print object, in this case, a multipart form, and via the ink ribbon positioned between the multipart form and the dot pins, characters are printed, as dots, on the top sheet. Specification, Page 1, Lines 11-14. At the same time, beneath the top sheet, the force with which the dot pins strike the multipart form causes corresponding dots to be produced on sheets of

pressure sensitive paper, or causes dots to be transferred from carbon paper to facing, untreated sheets. Specification, Page 1, Lines 14-16. In either event, the characters that are printed, as dots, on the top sheet are also printed on each of the lower sheets. Specification, Page 1, Lines 16-18. While the print head is moved along a print object, multiple dot pins are moved in the above described manner to form, from dots, a plurality of characters, in order to perform a predetermined printing task. Specification, Page 1, Lines 18-20.

One problem encountered with the above impact printer is that as the number of sheets in a multipart form is increased, the density of the printing on the bottom sheet is reduced. Specification, Page 2, Lines 1-2. Furthermore, when the density of the printing of individual dots is reduced, the visibility of the characters thus printed differs, depending on the thicknesses thereof. Specification, Page 2, Lines 3-4. That is, a fine character, for which thin lines are used that are only one dot wide, will be less visible than a character for which thick lines are used that are several dots wide. Specification, Page 2, Lines 4-6.

To resolve this problem, the force with which each dot pin strikes a printing object must be increased. Specification, Page 2, Lines 7-8. However, if the pressure applied by dot pins is merely increased, because of the additional wear and tear that this will impose, ink ribbons will have to be replaced more frequently, the abrasion of dot pins will be accelerated, and more noise will be generated during printing. Specification, Page 2, Lines 8-11.

For driving the dot pins, normally a coil is employed. Specification, Page 2, Line 12. This coil is magnetized or demagnetized by switching on or off the power transmitted to it, and accordingly, the dot pins are actuated and reciprocally moved. Specification, Page 2, Lines 12-14. For this drive mechanism, when the current supplied to the coil is increased to magnify the pressure applied by the dot pins, there is a like increase in the generation of heat by the coil, which has an adverse affect on the continuous employment of the coil. Specification, Page 2, Lines 14-17.

It is believed, therefore, that a printer which overcomes the aforementioned disadvantages would constitute an advancement in the art. Specification, Page 2, Lines 18-19.

The problems outlined above may at least in part be solved in one embodiment of the present invention of an impact printer that comprises pins for providing an impact and an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed. Specification, Page 3, Lines 1-3.

When the thus arranged printer changes the force with which the pins impact, the density of the dot printing performed on each sheet of a multipart form is changed. Specification, Page 3, Lines 4-5. That is, when the force of impact is changed in accordance with the settings for the characters that are printed as dots, e.g., in accordance with the thicknesses or the fonts of the characters, the visibility of printed characters can be increased. Specification, Page 3, Lines 5-8. As one example of a specific method for changing the force of impact, a current, which is supplied to a coil that uses magnetic force to drive pins, need only be changed in consonance with an alteration of the time period allocated for magnetization and of the voltage that is employed in order for the magnetic force generated by the coil to be changed. Specification, Page 3, Lines 8-12. The impact force can also be changed by altering the number of pulse current generations performed during a predetermined period of time. Specification, Page 3, Lines 12-13.

A form printer according to another aspect of the present invention comprises a plurality of pins for impacting a form on a platen, a drive unit, for reciprocally driving the pins in forward and backward directions, and a controller, for controlling the drive unit and for changing, in accordance with the types of characters that are to be printed, the impact force transmitted by the pins. Specification, Page 3, Lines 15-19. Furthermore, the velocity of the pins may also be changed in order to alter the impact force. Specification, Page 3, Lines 19-20.

A plurality of character sets can be printed by the printer. Specification, Page 3, Line 21. When a character to be printed belongs to a first character set wherein many thick characters are included, the controller reduces the impact force transferred by the pins, and when a character to be printed belongs to a second character set wherein many fine characters are included, the controller increases the impact force. Specification, Page 3, Lines 21-25. Therefore, since the impact force is reduced for the first character set, wherein many thick characters are included, pin abrasion can be reduced, and since the impact force is increased for the second character set, wherein many fine characters are included, the printing density and visibility of characters can be improved. Specification, Page 3, Lines 25-28.

The terms "thick characters" or "fine characters" as used here merely indicate that the characters belong to a character group for which wide lines are used or to a character group for which narrow lines are used. Specification, Page 4, Lines 1-3. The use of these terms is not intended to establish specific values for limiting the thicknesses of individual characters. Specification, Page 4, Lines 3-4.

A printer according to yet another aspect of the present invention is provided which is designed such that the impact force transferred by the pins is changed in accordance with the number of dots arranged across the width of a line used in a print image. Specification, Page 4, Lines 5-7. In addition, a plurality of levels are prepared for the impact force modes, and the modes may be selected in accordance with the number dots arranged across the width of a line. Specification, Page 4, Lines 7-9. When the impact force is changed in this manner, the print density of each dot is varied, and if the width of a line is only one dot, by increasing the impact force a greater print density is provided for the individual dots in a line, so that the visibility of the line is improved. Specification, Page 4, Lines 9-12. When two or more dots are arranged across the width of a line, the visibility of the line is higher than is that of a line having a single dot width when the same dot print density is used. Specification, Page 4, Lines 12-14. Therefore, even when, as in this case, the impact force is less than that employed for printing a one dot wide line, the line formed by the dots is satisfactorily visible. Specification, Page 4, Lines 14-16.

According to still another aspect of the present invention, a method for controlling a printer is provided wherein pins are used to impact a print object and wherein, to print a plurality of character sets, a plurality of dots is so printed. Specification, Page 4, Lines 17-19. The method comprises the steps of identifying a character set to be printed and using the pins (in accordance with the specification for the character set), to transfer the impact force. Specification, Page 4, Lines 19-21. Since the character set is identified, an impact force consonant with the character set can be set. Specification, Page 4, Lines 21-22. Therefore, it is preferable that, in accordance with the character sets that are to be used, multiple impact force levels be prepared in advance. Specification, Page 4, Lines 22-23.

According to another aspect of the present invention, a printing controller is provided which prints characters formed by dots by using pins to transfer an impact force to a receiving sheet. Specification, Page 5, Lines 1-3. The controller comprises a data analyzer, for determining the type of character set included in the print data and a printer head controller for employing the determination results obtained by the data analyzer to change the impact force transferred by the pins. Specification, Page 5, Lines 3-5. The data analyzer can determine a type of the character set in accordance with a predetermined command that is entered when a character font is to be changed, and an impact force value that corresponds to the character font that can be selected from among multiple preset values. Specification, Page 5, Lines 5-8.

VI. ISSUES

A. Are claims 1-3 and 10-11 properly rejected under 35 U.S.C. §103(a) as being unpatenable over Gilbert et al. (U.S. Patent No. 3,866,533) (hereinafter "Gilbert") in view of Ohsawa et al. (U.S. Patent No. 4,774,882) (hereinafter "Ohsawa")?

B. Are claims 4 and 6 properly rejected under 35 U.S.C. §103(a) as being unpatenable over Quaif et al. (U.S. Patent No. 4,020,939) (hereinafter "Quaif") in view of Ohsawa?

C. Is claim 5 properly rejected under 35 U.S.C. §103(a) as being unpatenable over Quaif in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin (NN7903410) (hereinafter "IBM Technical Disclosure Bulletin")?

D. Are claims 7-9 properly rejected under 35 U.S.C. §103(a) as being unpatenable over Gilbert in view of Kobayashi et al. (U.S. Patent No. 4,566,813) (hereinafter "Kobayashi")?

E. Are claims 12-13 properly rejected under 35 U.S.C. §103(a) as being unpatenable over Gilbert in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin (NN7903410)?

VII. GROUPING OF CLAIMS

Claims 1-3 and 10-11 form a first group.

Claims 4 and 6 form a second group.

Claims 12 and 13 form a third group.

Claims 5 and 7-9 should not be grouped together and should be considered separately.

The reasons for these groupings are set forth in Appellant's arguments in Section VIII.

VIII. ARGUMENT

A. Claims 1-3 and 10-11 are not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Gilbert in view of Ohsawa

The Examiner has rejected claims 1-3 and 10-11 under 35 U.S.C. §103(a) as being unpatentable over Gilbert in view of Ohsawa. Paper No. 6, page 2.

A *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to

make the claimed inventions. M.P.E.P. §2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d. 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

The Examiner states:

> Gilbert et al. teach all the limitations as explained above to claims 1 and 2, except for the limitation of the impact force of the pins is changing accordance with the settings for characters that are to be printed. Ohsawa et al. teach an impact printer comprising an energizing pulse generator or an impact force controller (36) for controlling the impact force of the hammer (16) accordance to the settings for characters to be printed (see col. 6 of Ohsawa et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Gilbert et al. with an impact force controller that taught by Ohsawa et al. so that a design density for a selected character can be achieved. Paper No. 6, pages 2-3.
>
> Gilbert et al. teach all the limitations as explained above to claims 10 and 11, except for the limitation of 'generating impact ... character set' (claim 10) and 'a printer controller ... the pins' (claim 11). Ohsawa et al. teach an impact printer comprising an energizing pulse generator or an impact force controller (36) for controlling the impact force of the hammer (16) accordance to the type of characters set which is identified or determined by the CPU or data analyzer (32) (see col. 6 of Ohsawa et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Gilbert et al. with a pulse control circuit or a printer head controller (40) that taught by Ohsawa et al. so that a design density for a selected character can be achieved. Paper No. 6, pages 3-4.

Thus, the Examiner's motivation for modifying Gilbert: (1) to include "an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed," as recited in claim 1, and (2) to "generate impact power to the pins in accordance with the types of an identified character set," as recited in claim 10, is "so that a design density for a selected character can be achieved." Paper No. 6, pages 2-4. This is merely the Examiner's

own opinion, and thus not objective evidence sufficient to support a *prima facie* case of obviousness.

Further, there is no motivation to combine Gilbert with Ohsawa. In particular, there is no suggestion or motivation in either Gilbert or Ohsawa, or in their combination, or in the knowledge of those ordinarily skilled in the art to combine the teaching of providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms, as taught in Gilbert, with the teaching of increasing printing impact energy in the case of a normal density imprint function and decreasing printing impact energy in the case of a high density imprint function, as taught in Ohsawa.

Gilbert teaches:

> Impression control for an impact printer is provided by changing the width of the pulse applied to the print hammers in accordance with the thickness of the forms on which printing is being performed and in accordance with the voltage of the source energizing the print hammers, so as to maintain a constant impact force to provide uniform print density for different form thicknesses. Misregistration of characters caused by a variation in the rate of movement of the print hammer is compensated for by changing the start time of the pulse energizing the hammer. Abstract.

Thus, Gilbert teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms. Further, Gilbert teaches a constant impact force is maintained to provide uniform print density for different form thicknesses.

Ohsawa, on the other hand, teaches:

> A method for controlling printing impact in an impact type dot printer which controls printing impact energy to be increased in case of normal density imprint function and to be decreased in case of high density imprint function in the controlling means of the impact type dot printer in which the printing stylus strikes the printing paper so that the printing paper can be prevented from being damaged during the high density imprint function. Abstract.

Thus, Ohsawa teaches a dot matrix printer that increases the printing impact energy in the case of a normal density imprint function and decreases the printing impact energy in the case of a high density imprint function.

The Examiner has not shown why a reference that teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms as well as providing a constant impact force, as taught in Gilbert, should be combined with a reference that teaches a dot matrix printer that increases the printing impact power in the case of a normal density imprint function and decreases the printing impact power in the case of a high density imprint function, as taught in Ohsawa. The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of combining the reference that teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms as well as providing a constant impact force with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Therefore, the Examiner has not present a *prima facie* case of obviousness for rejecting claims 1-3 and 10-11.

As stated above, the Examiner's motivation for modifying Gilbert: (1) to include "an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed," as recited in claim 1, and (2) to "generate impact power to the pins in accordance with the types of an identified character set," as recited in claim 10, is "so that a design density for a selected character can be achieved." Paper No. 6, pages 2-4. The Examiner has not shown why Gilbert should be modified to include an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed. Further, the Examiner has not shown why Gilbert should be modified to generate impact power to the pins in accordance with the types

of an identified character set. Further, the Examiner has not shown why Gilbert should be modified so that a design density for a selected character can be achieved.

The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Gilbert to include an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Further, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Gilbert to generate impact power to the pins in accordance with the types of an identified character. *Id.* Further, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Gilbert so that a design density for a selected character can be achieved. *Id.* Accordingly, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 1-3 and 10-11.

Furthermore, if the proposed modification or combination of the prior art would change the principle of the operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959). Further, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). For the reasons discussed below, Appellant submits that by combining Gilbert with Ohsawa, the principle of operation in Gilbert would change and subsequently render the operation of Gilbert to perform its purpose unsatisfactory.

As stated above, Gilbert teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms. Gilbert further teaches a constant impact force is maintained to provide uniform print density for different form thicknesses. However, Ohsawa teaches increasing the printing impact energy in the case of a normal density

imprint function and decreasing the printing impact energy in the case of a high density imprint function. By combining Gilbert and Ohsawa, Gilbert would no longer be able to maintain a constant impact to provide uniform print density for different form thicknesses. Instead, the impact force would be adjusted based on whether the printing mode is a normal density or a high density.

Furthermore, Gilbert teaches:

> A plurality of print hammers 20 are positioned one in each position along the print line for impacting the document 22 and a ribbon 24 against selected type characters 13 as they pass the different print positions. Timing marks 16 are provided on the band 12 which are scanned by a transducer 18 and used for producing timing signals for use in the control system. Column 2, lines 19-26.

Thus, Gilbert teaches *imprinting an entire character at one time.* However, as stated above, Ohsawa teaches a dot matrix printer. *A dot matrix printer imprints dots or portions of a character at one time.* Hence, by combining Gilbert with Ohsawa, *Gilbert would no longer be able to imprint an entire character at one time.*

Thus, by combining Gilbert with Ohsawa, the principle of operation in Gilbert would change and subsequently render the operation of Gilbert to perform its purpose unsatisfactory. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 1-3 and 10-11.

B. Claims 4 and 6 are not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Quaif in view of Ohsawa

The Office Action has rejected claims 4 and 6 as being unpatentable over Quaif in view of Ohsawa. Paper No. 6, page 4.

1. The Examiner Has Not Presented a *Prima Facie* Case of Obviousness for Rejecting Claims 4 and 6

As stated above, a *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art references to

make the claimed inventions. M.P.E.P. § 2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d. 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

The Examiner states:

> Quaif et al. teach all the limitations as explained above to, except for the limitation of the impact force of the pins is changing accordance with the settings for characters that are to be printed. Ohsawa et al. teach an impact printer comprising an energizing pulse generator or an impact force controller (36) for controlling the impact force of the hammer (16) accordance to the settings for characters to be printed (see col. 6 of Ohsawa et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Quaif et al. with an impact force controller that taught by Ohsawa et al. so that a design density for a selected character can be achieved. Paper No. 6, pages 4-5.
>
> With respect to the recitation of 'changing....impact force' (lines 5-11 of claim 6), Ohsawa et al. teach an impact printer comprising an energizing pulse generator or an impact force controller (36) for controlling the impact force of the hammer (16) accordance to the settings for characters to be printed, the controller controlling the impact force of the print hammer by reducing or increasing the impact force of the print hammer according to the high density printing mode (thick characters) or normal density mode (fine characters) (see cols. 4-8 of Ohsawa et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Quaif et al. with an impact force controller for controlling the impact force of the print hammer in according to the high or normal density printing mode that taught by Ohsawa et al. so that a design density for a selected character can be achieved. Paper No. 6, page 5.

Thus, the Examiner's motivation for modifying Quaif with Ohsawa to have a controller for "changing the impact force of the pins in accordance with the types of characters that are to be printed," as recited in claims 4 and 6, is so that "a design density for a selector character can be achieved." Paper No. 6, Page 5.

There is no motivation to combine Quaif with Ohsawa. In particular, there is no suggestion or motivation in either Quaif or Ohsawa, or in their combination, or in the knowledge of those ordinarily skilled in the art to combine the teaching of varying the print hammer repetition rate in accordance with the printing speed to maintain constant width of the printed characters, as taught in Quaif, with the teaching of increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa.

Quaif teaches:

> [a] matrix printer hammer repetition rate control is disclosed for varying the print hammer repetition rate in accordance with printing speed, thereby maintaining constant width of printed characters without dot column sensing. Abstract.

Thus, Quaif teaches varying the print hammer repetition rate in accordance with the printing speed to maintain a constant width of the printed characters. As stated above, Ohsawa teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function.

The Examiner indicates that both Quaif and Ohsawa teach controlling the impact force of the hammers. Paper No. 6, page 10. However, this does not show why a reference that teaches varying the print hammer repetition rate to maintain a constant width of the printed characters, as taught in Quaif, should be combined with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa. Further, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of combining the reference that teaches varying the print hammer repetition rate to maintain constant width of the printed characters with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint

function. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Therefore, the Examiner has not present a *prima facie* case of obviousness for rejecting claims 4 and 6.

Furthermore, as stated above, the Examiner's motivation for modifying Quaif with Ohsawa to have a controller for "changing the impact force of the pins in accordance with the types of characters that are to be printed," as recited in claims 4 and 6, is so that "a design density for a selector character can be achieved." Paper No. 6, Page 5. The Examiner has not objectively shown why Quaif should be modified to have a controller for changing the impact force of the pins in accordance with the types of characters that are to be printed. Furthermore, the Examiner has not objectively shown why Quaif should be modified so that a design density for a selected character can be achieved.

The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Quaif to use *a* controller for changing the impact force of the pins in accordance with the types of characters that are to be printed. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Further, the Examiner must submit **objective evidence** and not rely on his own subjective opinions in support of modifying Quaif so that a design density for a selected character can be achieved. *Id.* Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 4 and 6.

Further, there is no motivation to modify Quaif with Ohsawa as the proposed modification would render the invention in Quaif unsatisfactory for its intended purpose and therefore there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984); M.P.E.P. § 2143.01. Furthermore, the proposed modification would change the principle of operation of Quaif and therefore the teachings of Quaif are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959); M.P.E.P. § 2143.01. For the reasons discussed below, Appellant submits that by combining Quaif with Ohsawa, the principle of operation in Quaif

would change and subsequently render the operation of Quaif to perform its purpose unsatisfactory.

> Quaif teaches that:
>
> > [t]he print head impact energy is maintained substantially constant during printing by the novel hammer impact control circuitry of the present invention. The print head energy, in the form of electrical impulses, is applied to the individual matrix wire solenoid drivers in the print head, and is maintained constant notwithstanding variations in the output voltage or current of power supply. Column 3, lines 39-46.

Thus, Quaif teaches that the print head impact energy is maintained substantially constant during printing. As stated above, Ohsawa teaches increasing the printing impact energy in the case of a normal density imprint function and decreasing the printing impact energy in the case of a high density imprint function. Thus, by combining Ohsawa with Quaif, Quaif would no longer be able to maintain the print head impact energy to be substantially constant during printing. Hence, the proposed modification would render the invention in Quaif unsatisfactory for its intended purpose, and therefore, there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984); M.P.E.P. § 2143.01. Furthermore, the proposed modification would change the principal of operation of Quaif, and therefore, the teachings of Quaif are not sufficient to render the claims *prima facie* obvious as a matter of law. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. § 349 (C.C.P.A. 1959); M.P.E.P. § 2143.01. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 4 and 6.

2. Quaif and Ohsawa, taken singularly or in combination, do not teach or suggest the following claim limitations

Quaif and Ohsawa, taken singly or in combination, do not teach or suggest "a drive unit, for reciprocally driving the pins in both forward and backward directions relative to the form on the platen" as recited in claim 4 and similarly in claim 6. The Examiner refers to element 18 in Figure 1 of Quaif as teaching the above-cited claim limitation. Paper No. 2, page 4; Paper No. 6, page 11. Instead, Quaif teaches:

> /t]he carriage upon which the print heads are mounted is driven by a reversible dc motor under the control of motor control for accelerating motor up to print velocity and for maintaining a substantially constant velocity during printing. Motor control varies the speed of dc motor by means of a dual feedback from the driven carriage and from power supply to maintain constant motor speed during power supply variations, without conventional regulation circuitry. Column 3, lines 14-23.

Thus, Quaif teaches driving a carriage using a reversible dc motor which suggests driving the carriage in both directions. However, driving a carriage does not correspond to reciprocally driving the pins in both forward and backward directions relative to the form on the platen. Therefore, the Examiner has not provided a *prima facie* case of obviousness for rejecting claims 4 and 6. M.P.E.P. §2143.

C. Claim 5 is not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Quaif in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin

The Office Action has rejected claim 5 as being unpatentable over Quaif in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin. Paper No. 6, page 5.

As stated above, a *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. § 2142. The showings must be clear and particular and supported by objective evidence. *In re* Lee, 277 F.3d 1338, 1343, 61

U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 200); *In re Dembiczak*, 50 U.S.P.Q.2d. 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

The Examiner states:

> With respect to claim 5, the modified device of Quaif et al. and Ohsawa et al. teach all the limitations as explained above to claim 4, except for the moving velocity of the pins is changed in order to alter the impact force. The IBM Technical Disclosure Bulletin teach an electronic control of print impact in a typewriters including control means for assigning discrete impact force or impact velocities to each character font (page 4110-4112). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Quaif et al. and Ohsawa et al. with the control means for assigning discrete impact force or impact velocities to each character font that taught by The IBM Technical Disclosure Bulletin so that the impact force for the selected character can be precisely achieved. Paper No. 6, pages 5-6.

Thus, the Examiner's motivation for modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin so that "the moving velocity of the pins is changed in order to alter the impact force," as recited in claim 5, is "so that the impact force for the selected character can be precisely achieved." Paper No. 6, page 6.

There is no motivation to combine Quaif with Ohsawa and the IBM Technical Disclosure Bulletin. In particular, there is no suggestion or motivation in either Quaif, Ohsawa or the IBM Technical Disclosure Bulletin, or in their combination, or in the knowledge of those ordinary skilled in the art to combine the teaching of varying the print hammer repetition rate in accordance with the printing speed to maintain constant width of the printed characters, as taught in Quaif, with the teaching of increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa, as well as with the teaching of assigning a specific impact velocity to each character in the font, as taught in the IBM Technical Disclosure Bulletin. As stated above, Quaif teaches varying the print

hammer repetition rate in accordance with the printing speed to maintain constant width of the printed characters. Furthermore, as stated above, Ohsawa teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high-density imprint function. Furthermore, the IBM Technical Disclosure Bulletin teaches "a specific impact velocity" that "should be assigned to each character in the font." IBM Technical Disclosure Bulletin (March 1979), page 410. The IBM Technical Disclosure Bulletin further teaches that "attached to the rocker is a velocity transducer which feeds a signal proportional to the velocity of the rocker and thus the print element." The IBM Technical Disclosure Bulletin (March 1979), page 4110. Thus, the IBM Technical Disclosure Bulletin teaches assigning a specific impact velocity to each character.

The Examiner has not shown why a reference that teaches varying the print hammer repetition rate to maintain a constant width of the printed characters, as taught in Quaif, should be combined with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa, as well as with a reference that teaches assigning a specific impact velocity to each character as taught in the IBM Technical Disclosure. The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of combining the reference that teaches varying the print hammer repetition rate to maintain constant width of the printed characters with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function as well as with a reference that teaches assigning a specific impact velocity to each character. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claim 5.

As stated above, the Examiner's motivation for modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin so that "the moving velocity of the pins is

changed in order to alter the impact force," as recited in claim 5, is "so that the impact force for the selected character can be precisely achieved." Paper No. 6, page 6. The Examiner has not shown why Quaif should be modified with Ohsawa and the IBM Technical Disclosure Bulletin to change the moving velocity of the pins in order to alter the impact force. Furthermore, the Examiner has not shown why Quaif should be modified with Ohsawa and the IBM Technical Disclosure Bulletin so that the impact force for the selected character can be precisely achieved.

The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin to change the moving velocity of the pins in order to alter the impact force. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2000). Furthermore, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin so that the impact force for the selected character can be precisely achieved. *Id.* Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claim 5.

D. Claims 7-9 are not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Gilbert in view of Kobayashi

The Office Action has rejected claims 7-9 as being unpatentable over Gilbert in view of Kobayashi. Paper No. 6, page 6.

1. The Examiner has not provided any motivation for combining Gilbert with Kobayashi

As stated above, a *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. §2142. The showings must be clear and particular and supported by objective evidence. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d. 1614,

1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

The Examiner states:

> Gilbert et al. teach all the limitations as explained above, except for the limitation of changing the impact force of the pins according to the number of dots that arranged across the widths of lines forming the print image. Kobayashi et al. teach a dot matrix printer controller comprising a control circuit for controlling the pulse width current applied to the print heads in according to the total number of dots used to print character (print image) or a number of dots that arranged across the widths of lines forming the print image (see cols. 3-5 of Kobayashi et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the impact force controller of Gilbert et al. to include the control circuit for controlling the pulse width current applied to the print heads in according to the total number of dots used to print character as taught by Kobayashi et al. so that the thickness or the print density of a selected character or image can be consistency maintained. Paper No. 6, pages 6-7.
>
> With respect to claim 9 and the recitation of 'the impact force ... object image' (lines 6-8 of claim 8), Kobayashi et al. teach a control circuit comprising a upper limit or a lower limit mode for control of increasing or decreasing the width of the applied pulse in according to the total of dots used to print character (print image) or a number of dots that arranged across the widths of lines forming the print image (see cols. 3-6 of Kobayashi et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the impact force controller of Gilbert et al. to include the control circuit comprising a upper limit or a lower limit mode for control of increasing or decreasing the width of the applied pulse in according to the total of dots used to print character as taught by Kobayashi et al. so that print quality such as thickness or print density can be consistency maintained during the printing of a selected character. Paper No. 6, page 7.

Thus, the Examiner's motivation for modifying Gilbert to "change an impact force exerted by a plurality of pins in accordance with the number of dots that are arranged across the widths of lines forming the print image," as recited in claims 7-8, is "so that the thickness or the print density of a selected character or image can be consistently maintained." Paper No. 6, page 7.

There is no motivation to combine Gilbert with Kobayashi. In particular, there is no suggestion or motivation in either Gilbert or Kobayashi, or in their combination, or in the knowledge of those ordinarily skilled in the art to combine the teaching of providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms, as taught in Gilbert, with the teaching of a dot matrix controller comprising a counter means for counting the number of dots of a dot pattern to be printed, as taught in Kobayashi.

As stated above, Gilbert teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms. Further, Gilbert teaches a constant impact force is maintained to provide uniform print density for different form thicknesses.

Kobayashi, on the other hand, teaches:

> A dot-matrix print controller having a dot pattern generating means for generating a dot pattern to be printed and a means for supplying current pulses to a dot-matrix print head in accordance with an output of said dot pattern generating means, said controller comprising a counter means for counting the number of dots of a dot pattern to be printed; and a pulse width control means for controlling the width of said current pulses applied to said print head so that the thickness of print is constant. Abstract.

Thus, Kobayashi teaches a dot matrix controller comprising a counter means for counting the number of dots of a dot pattern to be printed.

The Examiner has not shown why a reference that teaches *providing* impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms as well as providing a constant impact force, as taught in Gilbert, should be combined with a reference that teaches a dot matrix controller comprising a counter means for counting the number of dots of a dot pattern to be printed, as taught in Kobayashi. The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of combining the reference that teaches providing impression control for an impact

printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms as well as providing a constant impact force with a reference that teaches a dot matrix controller comprising a counter means for counting the number of dots of a dot pattern to be printed. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Therefore, the Examiner has not present a *prima facie* case of obviousness for rejecting claims 7-9.

As stated above, the Examiner's motivation for modifying Gilbert to "change an impact force exerted by a plurality of pins in accordance with the number of dots that are arranged across the widths of lines forming the print image," as recited in claims 7-8, is "so that the thickness or the print density of a selected character or image can be consistently maintained." Paper No. 6, page 7. The Examiner has not shown why Gilbert should be modified to change an impact force exerted by a plurality of pins in accordance with the number of dots that are arranged across the widths of lines forming the print image. Further, the Examiner has not shown why Gilbert should be modified so that the thickness or the print density of a selected character or image can be consistently maintained.

The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Gilbert to change an impact force exerted by a plurality of pins in accordance with the number of dots that are arranged across the widths of lines forming the print image. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2000). Further, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Gilbert so that the thickness or the print density of a selected character or image can be consistently maintained. *Id.* Accordingly, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 7-9.

Furthermore, if the proposed modification or combination of the prior art would change the principle of the operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959). Further, if the

proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). For the reasons discussed below, Appellant submits that by combining Gilbert with Kobayashi, the principle of operation in Gilbert would change and subsequently render the operation of Gilbert to perform its purpose unsatisfactory.

As stated above, Gilbert teaches imprinting an entire character at one time. However, as stated above, Kobayashi teaches a dot matrix printer. A dot matrix printer imprints dots or portions of a character at one time. Hence, by combining Gilbert with Kobayashi, Gilbert would no longer be able to imprint an entire character at one time. Thus, by combining Gilbert with Kobayashi, the principle of operation in Gilbert would change and subsequently render the operation of Gilbert to perform its purpose unsatisfactory. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 7-9.

2. Gilbert and Kobayashi, taken singly or in combination, do not teach or suggest the following limitations

Gilbert and Kobayashi, taken singly or in combination, do not teach or suggest "wherein the impact force is set to a mode at one of a plurality of levels, and the impact force controller changes the mode in accordance with the number of dots that are arranged across the widths of lines forming an object image" as recited in claim 8. The Examiner directs Appellant's attention to columns 3-5 of Kobayashi as teaching the above-cited claim limitation. Paper No. 6, page 6. Instead, Kobayashi teaches:

> Steps 501 and 502 in FIG. 4 check whether or not the print signal is issued within a certain time interval. If the print signal is not entered, the pulse width is set to the initial value in step 503, or if the print signal is entered, control is transferred to step 504 in which the total number of dots for one character is counted and it is printed by steps 601-609 as shown in the flowchart of FIG. 5. In steps 504 and 505 of FIG. 4, the number of dots is checked and if it is larger than the specified value, as in the cases of complex characters such as " ", " " and " ", the print head is much heated due to the considerable amount

> of power applied to it, and on this account, the pulse width for a character printed next is reduced in step 506. The pulse width goes on decreasing and when it has fallen below the lower limit, control branches from step 507 to step 508 in which the pulse width is set to the lower limit. If, on the other hand, the number of dots is found smaller in step 505, as in the cases of printing simple characters such as " " and "0", the print head is cooled, and the pulse width for a character printed next is increased in step 509. Similarly to step 507, step 510 checks the increasing pulse width and it is set to the upper limit in step 511 when it exceeds the upper limit. The process completes by setting the timer in step 512. Column 3, line 52 – column 4, line 8.

Thus, Kobayashi teaches reducing the pulse width for a character to be printed next in response to a high temperature of the print head, i.e., in response to the print head printing a complex character. Kobayashi further teaches that the pulse width continues to be reduced until it has fallen below a lower limit. Kobayashi further teaches increasing the pulse width for a character to be printed next in response to a low temperature of the print head, i.e., in response to the print head printing a simple character. Kobayashi further teaches that the pulse width continues to be increased until it exceeds an upper limit. Hence, Kobayashi teaches determining if a pulse width is greater than or less than a limit. This language does not teach or suggest setting the impact force to a mode at one of a plurality of levels. Further, this language does not teach or suggest of a controller changing modes in accordance with the number of dots that are arranged across the widths of lines forming an object image. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claim 8. M.P.E.P. §2143.

Gilbert and Kobayashi, taken singly or in combination, do not teach or suggest "wherein, the command for changing the mode is included in print data for a character, and the impact force controller changes the mode in response to said mode" as recited in claim 9. The Examiner directs Appellant's attention to columns 3-6 of Kobayashi as teaching the above-cited claim limitation. Paper No. 6, page 7. Instead, as stated above, Kobayashi teaches reducing the pulse width for a character to be printed next in response to a high temperature of the print head, i.e., in response

to the print head printing a complex character. Kobayashi further teaches that the pulse width continues to be reduced until it has fallen below a lower limit. Kobayashi further teaches increasing the pulse width for a character to be printed next in response to a low temperature of the print head, i.e., in response to the print head printing a simple character. Kobayashi further teaches that the pulse width continues to be increased until it exceeds an upper limit. Hence, Kobayashi teaches determining if a pulse width is greater than or less than a limit. This does not teach or suggest setting the impact force to a mode at one of a plurality of levels. Further, this language does not teach or suggest that a command for changing the mode is included in print data for a character. Further, this language does not teach or suggest a controller changing modes. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claim 9. M.P.E.P. §2143.

E. Claims 12-13 are not properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Gilbert in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin

The Office Action has rejected claims 12-13 as being unpatentable over Gilbert in view of Ohsawa in further view of the IBM Technical Disclosure Bulletin. Paper No. 6, page 7.

1. The Examiner has not provided any motivation for combining Gilbert, Kobayashi and the IBM Technical Disclosure Bulletin

As stated above, a *prima facie* showing of obviousness requires the Examiner to establish, *inter alia*, that the prior art references teach or suggest, either alone or in combination, all of the limitations of the claimed invention, and the Examiner must provide a motivation or suggestion to combine or modify the prior art reference to make the claimed inventions. M.P.E.P. § 2142. The showings must be clear and particular and supported by objective evidence. *In re* Lee, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 200); *In re Dembiczak*, 50 U.S.P.Q.2d. 1614, 1617

(Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.*

The Examiner states:

> Gilbert et al. teach all the limitations as explained above, except for the limitation of changing the impact force of the pins according to the type of character set determining by the data analyzer. Ohsawa et al. teach an impact printer comprising an energizing pulse generator or an impact force controller (36) for controlling the impact force of the hammer (16) according to the type of characters set which is identified or determined by the CPU or data analyzer (32) (see col. 6 of Ohsawa et al.). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Gilbert et al. with a pulse control circuit or a printer head controller (40) that taught by Ohsawa et al. so that a design density for a selected character can be achieved. Paper No. 6, page 8.
>
> The modified device of Gilbert et al. and Ohsawa et al. teach all the limitations as explained above, except for limitation of the impact force of the pins is changing or being selected to a designated setup value corresponds to a character font determining by the data analyzer. The IBM Technical Disclosure Bulletin teach an electronic control of print impact in a typewriters including control means for assigning discrete impact force or impact velocities to each character font (page 4110-4112). In view of this teaching, it would have been obvious to one of ordinary skill in the art to modify the device of Gilbert et al. and Ohsawa et al. with the control means for assigning discrete impact force or impact velocities to each character font that taught by The IBM Technical Disclosure Bulletin so that the print quality of a variety of character font can be achieved. Paper No. 6, pages 8-9.

Thus, the Examiner's motivation for modifying Gilbert with Ohsawa and the IBM Technical Disclosure Bulletin to include "a print head controller" that (1) "employs the determination results obtained by the data analyzer to change the impact force transferred by the pins," as recited in claims 12 and 13, and (2) "selects and designates one setup value that corresponds to a character font from among values that are prepared for a plurality of levels to control the impact force transferred by the pins," as recited in claim 13, is "so that the print quality of a variety of character font can be achieved." Paper No. 6, page 9.

There is no motivation to combine Gilbert and Ohsawa with the IBM Technical Disclosure Bulletin. In particular, there is no suggestion or motivation in either Quaif, Ohsawa or the IBM Technical Disclosure Bulletin, or in their combination, or in the knowledge of those ordinary skilled in the art to combine the teaching of providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms, as taught in Gilbert, with the teaching of increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa, as well as with the teaching of assigning a specific impact velocity to each character in the font, as taught in the IBM Technical Disclosure Bulletin. As stated above, Gilbert teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms. Gilbert further teaches a constant impact force is maintained to provide uniform print density for different form thicknesses. Furthermore, as stated above, Ohsawa teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high-density imprint function. Furthermore, as stated above, the IBM Technical Disclosure Bulletin teaches assigning a specific impact velocity to each character.

The Examiner has not shown why a reference that teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance with the thickness of the forms, as taught in Gilbert, should be combined with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function, as taught in Ohsawa, as well as with a reference that teaches assigning a specific impact velocity to each character, as taught in the IBM Technical Disclosure Bulletin. The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of combining the reference that teaches providing impression control for an impact printer by changing the width of the pulse applied to the print hammer in accordance

with the thickness of the form with a reference that teaches increasing the printing impact power in the case of a normal density imprint function and decreasing the printing impact power in the case of a high density imprint function as well as with a reference that teaches assigning a specific impact velocity to each character. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002). Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 12-13.

As stated above, the Examiner's motivation for modifying Gilbert with Ohsawa and the IBM Technical Disclosure Bulletin to include "a print head controller" that (1) "employs the determination results obtained by the data analyzer to change the impact force transferred by the pins," as recited in claims 12 and 13, and (2) "selects and designates one setup value that corresponds to a character font from among values that are prepared for a plurality of levels to control the impact force transferred by the pins," as recited in claim 13, is "so that the print quality of a variety of character font can be achieved." Paper No. 6, page 9. The Examiner has not shown why Gilbert should be modified with Ohsawa and the IBM Technical Disclosure Bulletin to include a print head controller that employs the determination results obtained by the data analyzer to change the impact force transferred by the pins. Further, the Examiner has not shown why Gilbert should be modified with Ohsawa and the IBM Technical Disclosure Bulletin to include a print head controller that selects and designates one setup value that corresponds to a character font from among values that are prepared for a plurality of levels to control the impact force transferred by the pins. Furthermore, the Examiner has not shown why Gilbert should be modified with Ohsawa and the IBM Technical Disclosure Bulletin so that the print quality of a variety of character font can be achieved.

The Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin to include a print head controller that employs the determination results obtained by the data analyzer to change the impact force transferred by the pins. *In re Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2000). Furthermore, the Examiner must submit **objective evidence** and not rely on his own

subjective opinion in support of modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin to include a print head controller that selects and designates one setup value that corresponds to a character font from among values that are prepared for a plurality of levels to control the impact force transferred by the pins. Furthermore, the Examiner must submit **objective evidence** and not rely on his own subjective opinion in support of modifying Quaif with Ohsawa and the IBM Technical Disclosure Bulletin *so* that the print quality of a variety of character font can be achieved. *Id.* Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 12-13.

2. Gilbert, Kobayashi and the IBM Technical Disclosure Bulletin, taken singly or in combination, do not teach or suggest the following limitations

Gilbert, Kobayashi and the IBM Technical Disclosure Bulletin, taken singly or in combination, do not teach or suggest "a data analyzer, for determining the type of character set included in print data in accordance with the predetermined command that is entered when a character font is to be changed" as recited in claims 12 and 13. The Examiner directs Appellant's attention to elements 28 and 30 of Gilbert as teaching the above-cited claim limitation. Paper No. 6, page 8. Instead, Gilbert teaches:

> Information to be printed is stored in a print line buffer 26 which is scanned by the usual X drivers 28 and Y drivers 30 under the control of an X ring 32 and a Y ring 34 as described in the Demer et al. patent. Column 2, lines 27-30.

Thus, Gilbert teaches scanning information stored in a buffer using X and Y drivers. However, this language does not teach or suggest determining the type of character set included in print data in accordance with a command that is entered when a character font is to be changed. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 12 and 13. M.P.E.P. §2143.

Gilbert, Kobayashi and the IBM Technical Disclosure Bulletin, taken singly or in combination, do not teach or suggest "a print head controller, for employing the determination results obtained by the data analyzer to change the impact force

transferred by the pins" as recited in claims 12 and 13. As stated above, the Examiner directs Appellant's attention to elements 28 and 30 of Gilbert as teaching determining the type of character set included in print data in accordance with the predetermined command that is entered when a character font is to be changed. Paper No. 6, page 8. However, as stated above, Gilbert teaches scanning information stored in a buffer using X and Y drivers. Gilbert does not teach or suggest determining the type of character set included in print data in accordance with a command that is entered when a character font is to be changed. Hence, Gilbert, Kobayashi and the IBM Technical Disclosure Bulletin, taken singly or in combination, do not teach or suggest a print head controller that employs the determination results obtained by the data analyzer to change the impact force transferred by the pins. Therefore, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 12 and 13. M.P.E.P. §2143.

F. Conclusion Regarding 35 U.S.C. §103 Rejections

As a result of the foregoing, Appellant respectfully asserts that since there are numerous claim limitations not taught or suggested in the cited prior art, the Examiner has not presented a *prima facie* case of obviousness for rejecting claims 1-13 in view of the cited prior art. M.P.E.P. §2143.

IX. CONCLUSION

For the reasons noted above, the rejections of claims 1-13 are in error. Appellant respectfully requests reversal of the rejections and allowance of claims 1-13.

Respectfully submitted,
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APPENDIX

1. An impact printer comprising:

pins for providing an impact; and

an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed.

2. An impact printer comprising:

pins for providing an impact;

an impact force controller for changing the force with which the pins impact in accordance with the settings for characters that are to be printed;

drive means having a coil for driving the pins using magnetic force generated by electricity; and

electricity supply means for supplying electricity to the coil, wherein the impact force of the pins are changed according to changes of the magnetic force.

3. The impact printer according to the claim 2, wherein the impact force controller changes a supply time or a voltage of the electricity to the drive means.

4. A form printer comprising:

a plurality of pins, for impacting a form on a platen;

a drive unit, for reciprocally driving the pins in both forward and backward directions relative to the form on the platen; and

a controller for controlling the drive unit and for changing the impact force of the pins, in accordance with the types of characters that are to be printed.

5. The form printer according to the claim 4, wherein the moving velocity of the pins is changed in order to alter the impact force.

6. A form printer comprising:

a plurality of pins, for impacting a form on a platen;

a drive unit, for reciprocally driving said pins in both forward and backward directions; and

a controller for controlling the drive unit and for changing the impact force of the pins, in accordance with the types of characters that are to be printed, wherein a plurality of character sets are printed and wherein, when a character to be printed belongs to a first character set in which thick characters are included, the controller reduces the impact force transferred by the pins and further wherein, when a character to be printed belongs to a second character set in which fine characters are included, the controller increases the impact force.

7. A printer, which forms multiple dots by transferring an impact force to an object and printing an image, comprising:

a plurality of pins, for transferring the impact force; and

impact force controller, for changing the impact force exerted by the plurality of pins in accordance with the number of dots that are arranged across the widths of lines forming the print image.

8. A printer, which forms multiple dots by transferring an impact force to an object and printing an image, comprising:

pins for transferring the impact force; and

impact for controller, for changing the impact force exerted by the pins in accordance with the number of dots that are arranged across the widths of lines forming the print image, wherein the impact force is set to a mode at one of a

plurality of levels, and the impact force controller changes the mode in accordance with the number of dots that are arranged across the widths of lines forming an object image.

9. The printer according to the claim 8, wherein, the command for changing the mode is included in print data for a character, and the impact force controller changes the mode in response to said mode.

10. A method for controlling a printer, whose pins impact a print object and print a plurality of dots of a plurality of character sets, comprising the steps of:

identifying a character set to be printed; and

generating impact power to the pins in accordance with the types of the identified character set.

11. A printing controller, for a printer that by transferring an impact force using pins forms dots and prints characters on a sheet, comprising:

a data analyzer, for determining the type of character set included in print data; and

a print head controller, for employing the determination results obtained by the data analyzer to change the impact force transferred by the pins.

12. A printing controller, for a printer that by transferring an impact force using pins forms dots and prints characters on a sheet, comprising:

a data analyzer, for determining the type of character set included in print data in accordance with the predetermined command that is entered when a character font is to be changed; and

a print head controller, for employing the determination results obtained by the data analyzer to change the impact force transferred by the pins.

13. A printing controller, for a printer that by transferring an impact force using pins forms dots and prints characters on a sheet, comprising:

a data analyzer, for determining the type of character set included in print data in accordance with the predetermined command that is entered when a character font is to be changed; and

a print header controller, for employing the determination results obtained by the data analyzer to change the impact force transferred by the pins, the printer head controller selecting and designating one setup value that corresponds to a character font from among values that are prepared for a plurality of levels to control the impact force transferred by the pins.

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